

## **REMARKS**

Claims 2-3, 5-15, 18, 20, 22-23 and 26-30 are pending in the application.

Claims 16-17, 19, 21, and 24-25 are cancelled from the application without prejudice in this reply.

Claims 2-3, 5-15, 18, 20 and 22-23 are amended above primarily to overcome the examiner's rejection of claims under 35 U.S.C. §112, 2<sup>nd</sup> paragraph.

Claims 26-30 are newly added to the application in this reply.

No new matter is added to the application by way of these claim amendments.

### **I. THE 35 U.S.C. §112, 2<sup>nd</sup> PARAGRAPH REJECTION OF CLAIMS 2-15**

The examiner rejected claims 2-25 for being indefinite under 35 U.S.C. 112, 2<sup>nd</sup> paragraph. In response to the Examiner's objection under 35 USC 112, claims 2 to 25 have been amended, as summarized below, to more distinctly claim the invention.

- In claim 2, the phrase "carries a plurality of apertures" has been replaced with "includes a plurality of slits". Such slits are illustrated clearly in Figures 1 and 2 for example, and this phrase would be immediately clear to a person skilled in the art.
- The abbreviation "e/m" has been replaced by the longhand "electromagnetic" throughout the claims.
- Claim 3 has been amended above to overcome the examiner's rejection for lack of antecedent basis for the term "material". In particular, claim 3 is amended to replace the term "material" with the term "absorber". A corresponding amendment has been made to Claim 20.
- The word "can" has been deleted from claim 14 and the claim has been rewritten in positive form.
- Claims 16 and 18 have been amended above as suggested by the examiner in the Office Action.
- The examiner's rejection of claims 19 and 25 are moot as those claims have been cancelled from the application above.

## **II. THE REJECTION OF CLAIMS 14-19, 22 AND 24 UNDER 37 CFR §1.71 AND UNDER 35 U.S.C. §112, 1<sup>st</sup> PARAGRAPH**

The Examiner objected to or rejected claims 14-19, 22 and 24 under 37 CFR 1.71 and under 35 U.S.C. 112, 1<sup>st</sup> paragraph alleging that that the specification fails to disclose the subject matter of Claims 14-19, 22 and 24. It is respectfully submitted that, for at least the reasons recited below, the specification has no such failing.

### **A. Claim 14**

It is the examiner's position that the specification fails to set forth how to make and use structure to vary the "refractive index of the dielectric . . . activity.

Concerning claim 14, it is taught on page 5, lines 17 to 22 of the specification as published that the dielectric core can be made of a material the refractive index of which can be varied in order to control the wavelength of radiation absorbed. Polymer Dispersed Liquid Crystal (PDLC) is described as an example of such a material, and it is further explained that such an embodiment can be made and used by arranging the structure such that a voltage can be applied across the core material.

PDLCs are well known for their optically variable properties and have been used in applications such as windows with controllable opacity. Although it is not obvious to use such materials in the way proposed by the present invention, once taught to do so by the subject application, the skilled person would have no difficulty implementing the technology. It is therefore considered that the person skilled in the art would readily understand and be able to put into effect such an embodiment.

Moreover, the examiner's rejection of claim 14 is overcome by amending claim 14 such that "the dielectric comprises a material having an actively variable refractive index.". As mentioned above, PDLCs are such materials meaning that amended claim 14 is clearly supported and enabled by the specification.

### **B. Claims 15 & 22**

It is the examiner's position that the specification fails to set forth how to make and use the "adhesive tape" of claim 15. The examiner also objects to the term "backed with an adhesive material" of claim 22.

Claim 15 recites an adhesive tape. It is explained on page 5, line 37 of the specification that such a tape can be made by adding an adhesive backing to the radiation absorber, and it is

further taught that such a tape can be applied to a surface of interest. It is submitted that the skilled person would have no difficulty in understanding and implementing the “adhesive tape” and “adhesive material” features of claims 15 and 22 based at least upon the specification excerpt identified above. Moreover, regarding the claim 22 phrase “backed with an adhesive material”, it is respectfully submitted that the addition of an adhesive material to the back of a surface is common general knowledge, and would be readily apparent to the man in the street, let alone the skilled person.

**C. Claims 16-17**

Claims 16 and 17 have been cancelled and so objections to these claims are moot.

**D. Claim 18**

It is the examiner’s position that the specification does not disclose how to make and use the “heating element” or “microwave” of claim 18.

Claim 18 is directed to a heating element for use in a microwave oven. It is described in the paragraph beginning on page 6, line 5 that such a heating unit can be achieved by creating packaging for meals from the absorber of the present invention. Again it is submitted that it would be clear to the skilled person, upon reading at least the specification excerpt mentioned above, how to use the claimed electromagnetic absorber as a microwave heating element.

**E. Claims 19 & 24**

Claims 19 and 24 have been cancelled and so objections to these claims are moot.

**III. THE DRAWING OBJECTIONS**

Turning now to the Examiner’s objections to the drawings, these appear to be directed towards the same features as those objected to under 37 CFR 1.71, and as discussed above. As noted, these are features that a person skilled in the art could readily practice without resort to figures. It is therefore respectfully considered that new drawings are not required.

**IV. TRAVERSE OF THE ANTICIPATION REJECTION**

The examiner rejected independent Claim 2 and dependent claims 3-5, 7-10, 20-21, 23 and 25 under 35 USC 102(e) in view of Gilbert (US 6,538,596).

Claim 2 has been amended above to include the features that the conductor layer includes “a plurality of slits. . . in a grating arrangement”. The Examiner makes reference to the passage

in Gilbert which notes that the ground plane can be composed of a slot array. Such slot arrays are, however, different from the arrangement of slits in the present invention. As described on page 4, lines 32 to 36 of the published application, the present invention employs slits in a grating arrangement. That means that the slits of the present application are continuous, extending substantially to the edges of the absorber, as opposed to known slot arrays in which a pattern of discrete slots are provided.

An advantage of the slit arrangement of the present invention is that the conductor layer is divided into a number of discrete elements, which affords the overall structure a degree of flexibility without substantial deformation of the individual elements themselves. A slot array on the other hand results in a continuous structure, whereby any imposed curvature is distributed uniformly across the structure. As such, flex or curvature of prior art structures typically results in degraded performance, whereas the grating structure of the present invention allows performance to be maintained even when curvature is imposed. Gilbert therefore does not describe a conductor layer including a plurality of slits in a grating arrangement.

To emphasise further this distinction over the prior art, claim 2 has been amended above to include the feature that the “absorber is flexible”. This feature was found in previous claim 21, and was interpreted by the Examiner as meaning ‘not absolutely rigid’. It is respectfully submitted that this interpretation, and the objection that the feature is met by Gilbert, is without merit.

The “flexible” feature of the present invention is described in the paragraph spanning pages 5 and 6 of the published application. Here it is stated that in embodiments where the absorber is flexible it can be applied to any surface of interest in a tape or appliqué film. It is therefore abundantly clear that the term ‘flexible’ in the current specification should be given its common dictionary definition of ‘willing or disposed to yield’, and the skilled reader would not consider any other interpretation. Gilbert therefore does not disclose a radar absorber which is flexible as claimed in the present invention.

For these reasons it is considered that Claim 2 is novel and non-obvious over the cited art. Remaining claims 3, 5-15, 18-20 and 22-23 are considered novel and non-obvious at least by virtue of their dependency upon Claim 2.

## V. NEW CLAIMS 26-30

New independent claim 26 recites the features of previous claim 20 as dependent upon previous claim 2, and therefore the Examiner's comments directed towards previous claim 20 will be addressed specifically.

The Examiner considers that  $\lambda_{\min}$  is not defined and that any thickness will be less than  $\lambda_{\min}/100$  for some arbitrary value of  $\lambda_{\min}$ . This is respectfully denied.

Claim 2 and claim 26 clearly define  $\lambda_{\min}$  as the lower limit of wavelength of radiation absorbed by the absorber. As explained in the present application, and as is well known in the field, radiation absorbing structures are typically adapted to absorb a specific frequency or range of frequencies of radiation. A given radar absorber therefore exhibits an inherent  $\lambda_{\min}$ , which can be determined and shown in a fashion similar to the plot of Figure 3 of the present application.

For a given absorber structure then, its thickness will be less than  $\lambda/100$  for some arbitrary wavelength as noted by the Examiner. However, in prior art absorbers, radiation of this wavelength will not be absorbed by that structure, as required by claim 26.

It is therefore considered that claim 26 is novel over the cited art. Claims 27 to 30 are considered novel at least by virtue of their dependency.

## CONCLUSION

All pending claims 2-3, 5-15, 18, 20, 22-23 and 26-30 are believed to be allowable for the reasons indicated above. Favorable reconsideration and allowance of all pending claims is, therefore, courteously solicited.

Respectfully submitted,  
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